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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/809,775	03/25/2004	Mutsuko Nichogi	MAT-8526US	7024

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EXAMINER	
REDDING, THOMAS M	
ART UNIT	PAPER NUMBER
2609	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/18/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/809,775	NICHOGI ET AL.	
	Examiner	Art Unit	
	Thomas M. Redding	2609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 March 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/25/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. Figures 1,4,13,15,16,17 and 18 are objected to as depicting block diagrams without "readily identifiable" descriptors of each block, as required by 37 CFR 1.84(n). Rule 84(n) requires "labeled representations" of graphical symbols, such as blocks; and any that are "not universally recognized may be used, subject to approval by the Office, if they are not likely to be confused with existing conventional symbols, and if they are readily identifiable." In the case of figures above, the blocks are not readily identifiable per se and therefore require the insertion of text that identifies the function of each block. That is, each vacant block should be provided with a corresponding label identifying its function or purpose.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New

Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

3. Claim 15 is objected to because of the following informalities: Claim 15 appears to have a typographical error. It states that it is "A method for processing an image according to claim 1 ... ". Claim 1 is an apparatus claim and from context it really appears that this claim is intended to depend from claim 11. For the remainder of this action will be assumed to read as "A method for processing an image according to claim 11 ...". Appropriate correction is required.

Claim Objections - 37 CFR 1.75(d)(1)

4. The following is a quotation of 37 CFR 1.75(d)(1):

> The claim or claims must conform to the invention as set forth in the remainder of the specification and the terms and phrases used in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description.

5. Claims 2 and 12 are objected to under 37 CFR 1.75(d)(1), as failing to conform to the invention as set forth in the remainder of the specification. These claims refer to an "enhancing value" which is not defined in the claims or in the claims upon which they depend. It seems likely that the "enhancing value" is the same as the "enhancing degree" mentioned in claim 1 and elsewhere. Recommend that the applicant alter the language for consistency.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Both of these claims have the phrase "wherein the sharpness enhancing process is to generate a blurred image the input image is blurred in an entire or part, and further to expand, by using the enhancing degree, a distribution of a high-frequency component of an input image first component value computed by the input image first principal component analysis value computed by analyzing, based on a primary component, an entire or part of the input image and a blurred image first principal component analysis value computed by analyzing, based on a principal component analysis, the blurred image, to which the blurred image first principal component analysis value is added." This is structurally so very difficult to interpret it is impossible to confidently state its intended meaning.

For the purposes of examination, claims 3 and 13 will be interpreted as if they were written:

Claim 3: An apparatus for processing an image according to claim 1, wherein the sharpness enhancing process is to sum a blurred copy of the input image and a filtered copy of the input image wherein the blurred copy is a blurring of the input image in entirety or in part and the filtered copy is created by selecting high frequency information on an axis of interest of the input image determined by a principle component analysis of the input image.

Claim 13: A method for processing an image according to claim 11, wherein the sharpness enhancing process is to sum a blurred copy of the input image and a filtered copy of the input image wherein the blurred copy is a blurring of the input image in entirety or in part and the filtered copy is created by selecting high frequency information on an axis of interest of the input image determined by a principle component analysis of the input image.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

8. Claims 1,4-6,11 and 14-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Kokemohr et al. (US 2004/0036923 A1).

Regarding claims 1 and 11 Kokemohr teaches: An apparatus for processing an image ("computer CPU 34", Kokemohr, paragraph 219, line 2 and figure 5, The CPU of Kokemohr provides the apparatus for each of the following elements), comprising: a subject information acquiring unit for extracting subject information contained in an input image from the input image (Figure 6, reference 16); a display information acquiring unit for acquiring display information representative of a performance of a display for displaying the input image (Figure 6, reference 18); an enhancement parameter determining unit for determining an enhancing degree as a parameter for enhancing a sharpness of the input image by using at least one of the subject information and the display information (Figure 6, reference 200); and

an enhancing processing unit for carrying out a sharpness enhancing process on the input image by using the enhancing degree (Figure 6, reference 202).

Regarding claims 4 and 14, Kokemohr discloses [a]n apparatus for processing an image according to claim 1, wherein the enhancing degree is an added value of the subject information and the display information (Kokemohr, figure 6A, reference 204, and "From the received parameters it is necessary to lookup, or calculate the values for both r.sub.p and r.sub.i which have been stored in measurement units of millimeters or inches, as described above, and some method must be used to combine 204 the two values to one unified sharpening radius 12 r. It is a matter of personal taste how to do that; any plausible merging of these values will do, so long as r.sub.p and r.sub.i are merged to one unified radius r. Various methods will be evident to those skilled in the art, such as taking the maximum of the values: ... or, the arithmetic mean of the values or, even weighted combinations of these or similar calculations. In general, any plausible interpolation or merging of the values r.sub.i and r.sub.p will work, and provide a better result than using either alone", Kokemohr, paragraphs 207 - 211).

Regarding claims 5 and 15, Kokemohr discloses [a]n apparatus for processing an image according to claim ~~1~~[11], wherein the subject information is at least one of a power spectrum of the subject, a statistic amount concerning a high-frequency component of the power spectrum, a power spectrum of a texture of the subject, a statistic amount concerning a high-frequency component of the power spectrum of the

texture of the subject, and a size of the texture of the subject ("detail resolution index 68 that is proportional to the number of details that a digital image 38, at its current image resolution 44, can display on a given vertical width, for example, 100 pixels. That means that the more blurry the image is, the lower will be the detail resolution index 68.", Kokemohr, paragraph 71, line 3, the detail resolution index, where the size of details relates to the size of features corresponds to the size of the texture of the subject).

Regarding claim 6 and 16, Kokemohr discloses [a]n apparatus for processing an image according to claim 1, wherein the display information uses at least one of a maximum luminance, a contrast, a resolution and the number of display colors ("having a given pixel dimension and image resolution", Kokemohr, paragraph 220, line 9).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 2, 3, 12, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kokemohr et al. (US 2004/0036923 A1) and Kwon et al. (4,945,502).

Regarding claims 2 and 12, Kokemohr teaches the elements of the parent claim as described above. Kokemohr does not teach the sharpness enhancing process is to expand a distribution of a first principal component analysis value computed by analyzing, based on a primary component, a part or entire of the input image by using the enhancing value.

Kwon, working in the same field of endeavor of image sharpening, describes a sharpness enhancing process to expand a distribution of a first principal component analysis value computed by analyzing, based on a primary component, a part or entire of an input image by using the enhancing value ("A singular value decomposition (SVD) block transformation method has been shown in the related application referenced above to discriminate between image detail and noise, and is consequently used in the present invention to perform noise suppression.", Kwon, column 1, line 39, Note that singular value decomposition can be used to implement principle component analysis, "singular value decomposition (SVD) that decomposes an image into a set of singular vectors and singular values that are closely analogous to the concept of principal component analysis in statistics." (Kwon, column 2, line 29).

It would have been obvious at the time the invention was made for one of ordinary skill in the art to use the sharpness enhancing process of Kokemohr to expand a distribution of a first principal component analysis value computed by analyzing, based on a primary component a part or entire of the input image of Kokemohr by using the enhancing value of Kokemohr as suggested by Kwon because "a noise reduction technique that discriminates based upon the variances of image detail will have a much

better chance of reducing noise without affecting texture extensively" (Kwon, column 2, line 23).

Regarding claims 3 and 13, in the combination of Kokemohr and Kwon above, Kokemohr teaches a method and apparatus, wherein the sharpness enhancing process is to sum a blurred copy of the input image and a filtered copy of the input image ("the sharpening algorithm comprises the steps of blurring a copy of the digital image using the image sharpening radius to produce a blurred image, ... , an over-sharpening protection algorithm, and combining the digital image with the luminosity difference to produce a sharpened image", Kokemohr, paragraph 18) wherein the blurred copy is a blurring of the input image in entirety or in part and the filtered copy is created by selecting high frequency information on an axis of interest of the input image determined by a principle component analysis of the input image. The elements of Kwon in the combination above, as explained above, teaches the use of PCA.

11. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kocher et al. ("Image data compression by contour texture modeling") and Tyler et al. (US 005638498 A).

Regarding claim 8, Kocher discloses a method for compressing an image, comprising:

a data separating unit for separating an input image into shape data and texture data ("pel classification into contour and texture pels", Kocher, page 133, line 10);
a shape data compressing unit for compressing the shape data and

an image transmitting unit for sending the shape data and texture data compressed ("... it is useful to apply source coding techniques to reduce the huge number of bits required to describe a digital image", Kocher, page 132, Introduction, line 5, One of the points to coding data is to reduce the amount of information that needs to be sent to memory or storage).

Kocher does not expressly disclose attaching information about compression to the compressed data, nor does Kocher disclose an apparatus for implementing his method.

Tyler, working in a similar field of endeavor of data compression, describes attaching information about compression to the compressed data ("a description of the used compression algorithm would be sent with the compressed data", Tyler, column 8, line 57); Tyler also describes an apparatus for implementing his method ("a computer system 10 suitable for reducing storage requirements in the display of visual representations includes ones or more digital computers 12", Tyler, Column 6 line 58 and figure 2).

It would have been obvious at the time the invention was made for one of ordinary skill in the art to attach information about compression to the compressed shape data of Kocher as suggested by Tyler "so that the output device could understand the compression algorithm and decompress the data", Tyler, column 8, line 59).

Regarding claim 9, the combination of Kocher and Tyler teaches the elements of claim 8 as described above. Kocher also discloses wherein the texture compressing unit

is to lower a resolution of the texture data ("The method used to compute these coefficients is the one that minimizes the mean square error between the original shape and the approximation", Kocher, page 137, Texture Coding section, line 6 and figure 14, as the compression process involves approximation, some data is lost reducing resolution)

Regarding claim 10, the combination of Kocher and Tyler does teach [a] system for processing an image including an image processing apparatus and an image compressing apparatus, wherein, the image processing apparatus comprises:

an image receiving section for receiving compressed shape data and compressed texture data (as described above, Tyler discloses hardware);

a shape data reconstructing unit for reconstructing the compressed shape data;

a texture data reconstructing unit for reconstructing the compressed texture data into an input image (Kocher does describe reconstructed images, Figures 15 though 20 on pages 138 and 139, and it is pointless to compress without there being a means to reverse the process); and

a mapping unit for mapping the input image or the input image processed by a sharpness enhancing process onto the shape data reconstructed (the normal decompression process maps the texture back onto the shape data, Kocher, figures 15 through 20); and

the image compressing apparatus comprises:

a data separating unit for separating an input image into shape data and texture data ("pel classification into contour and texture pels", Kocher, page 133, line 8);
a shape data compressing unit for compressing the shape data ("the contour pels belonging to the contours of the two adjacent regions are removed from one of them by applying an algorithm that preserves the connectivity of each contour. This leads to a decrease of the number of contour pels of about 50%. In the second step, the opened contours will be approximated by a succession of connected segments ... compared with the cost of the Freeman code and the cheapest description is chosen", Kocher, page 136, Contour coding section, lines 5-15) and attaching information about compression to the compressed data (the portion from Tyler described above);
a texture compressing unit for compressing the texture data ("The proposed texture coding scheme is composed of two steps", Kocher, page 137, Texture coding section, line 4); and
an image transmitting unit for sending the shape data and texture data compressed (the hardware of Tyler as described above).

12. Claims 7 and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kocher et al. ("Image data compression by contour texture modeling"), Tyler et al. (US 005638498 A) and Kokemohr et al. (US 2004/0036923 A1).

Regarding claims 7 and 17, Kokemohr discloses [a]n apparatus for processing an image according to claims 1 and 11.

Kocher does not disclose that the apparatus further comprises an image receiving section for receiving compressed shape data and compressed texture data, a shape data reconstructing unit for reconstructing the compressed shape data, a texture data reconstructing unit for reconstructing the compressed texture data into an input image, and a mapping unit for mapping the input image or the input image processed by the sharpness enhancing process onto the shape data reconstructed.

The combination of Kocher and Tyler does describe all of these elements as described in the rejections above (see the rejections addressing claim 10)

It would have been obvious at the time the invention was made for one of ordinary skill in the art to join to the sharpness enhancing methods of Kokemohr the compression methods described in the combination of Kocher and Tyler in order to "reduce the huge number of bits required to describe a digital image", Kocher page 132, Introduction section, line 5).

Regarding claim 18, the combination of Kocher, Tyler and Kokemohr discloses [a] method for processing an image according to claim 17, wherein the compressed shape data and the compressed texture data are those that the input image is separated into shape data and texture data ("pel classification into contour and texture pels", Kocher, page 133, line 10). and the shape data and the texture data are compressed respectively ("... a decrease of the number of contour pels of about 50%", Kocher, page 136, line 23 and "describing the texture information by means of 2-D polynomial functions resulting in a high compression ratio", Kocher, page 139, line 5);

Regarding claim 19, the combination of Kocher, Tyler and Kokemohr discloses [a] method for processing an image according to claim 18, wherein compressing the texture data is by lowering a resolution of the texture data ("The method used to compute these coefficients is the one that minimizes the mean square error between the original shape and the approximation", Kocher, page 137, Texture Coding section, line 6 and figure 14, as the compression process involves approximation, some data is lost reducing resolution).

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Marimont et al. (US005,809,179A) "Producing a Rendered Image Version of an Original Image using an Image Structure Map Representation of the Image" which describes segmenting an image in to shapes and textures.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas M. Redding whose telephone number is (571) 270-1579. The examiner can normally be reached on Mon - Fri 7:30 am - 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian P. Werner can be reached on (571) 272-7401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TMR

BRIAN WERNER
SUPERVISORY PATENT EXAMINER